

Energy Division Straw Proposal on EM&V Issues for June 17th EM&V Workshop

Workshop Objectives: The proposals presented in this document represent the Energy Division’s current vision and recommendations for Evaluation, Measurement and Verification (EM&V) for the 2009 – 2011 energy efficiency program period. The purpose of this document is to propose ideas to stimulate comments and develop a record on key 2009 – 2011 EM&V issues.

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A. Overall goals of EM&V

Energy Division proposes that the Commission rearticulate a set of goals for EM&V, modeled off of the goals proposed in Energy Division's White Paper issued by ruling on April 16, 2009, in A. 08-07-021 and R. 09-01-019. The adopted goals should guide the EM&V work managed by both the Energy Division and the IOUs. Below are the proposed goals for EM&V based on the white paper, with modifications:

EM&V activities shall be planned and implemented to achieve a balance of precision, accuracy, and cost efficiency, while meeting the following objectives:

1. Conducting research to support the development of data, information, and tools needed to improve the Commission's energy efficiency policies and enhance the IOUs' progress towards accomplishing the Commission's energy efficiency policy goals, GHG emissions reduction goals, and the California Energy Efficiency Strategic Plan goals.
2. Supporting the CPUC's oversight function of ensuring the efficient and effective expenditure of ratepayer funds within the energy efficiency portfolios.
3. Measurement and verification of the key technologies and services offered through the energy efficiency portfolios for the purpose of developing estimates of energy and environmental impacts.
4. Evaluation of the IOUs' portfolios of activities for the purpose of measuring performance relative to established performance metrics.
5. Providing information needed for day-to-day management of the EE portfolios.
6. Providing information directed at improving portfolio performance, relative to established Commission policy and goals over time.

B. Respective scope of EM&V responsibilities for CPUC and IOU Staff

As discussed in Energy Division's White Paper, EM&V activities are conceptually split into four categories:

- Measurement & Verification (M&V) and Impact Evaluation
- Process Evaluation
- Market Analysis and Policy Support Research
- Financial and Management Audits

Current Commission policy gives the Energy Division the responsibility to conduct impact evaluations, and M&V in order to quantify the impacts of the IOU program portfolios. The Commission further gives its staff the responsibility to conduct financial and management audits of the utility program administrators and program implementers. Commission policy also authorizes the IOUs to conduct process evaluations as part of their portfolio administration management responsibilities. In D. 05-11-011 the Commission authorized the IOUs to conduct

“...early M&V assessments on a quick turnaround basis in order to support the program design process and ensure quality control. As [the IOUs] explain, if the programs are not producing the savings expected because of faulty installation procedures, inaccurate baseline condition estimates or other reasons, the IOU program administrators need to know immediately by initiating targeted M&V activities to correct the problems or begin planning for more productive uses of the funds. In addition, early M&V can come in the form of measuring key assumptions during a pilot launch where the sample population is relatively small and testing the viability of innovating programs.”

Correspondingly, the Energy Division staff have conducted process evaluations on programs of particular interest to the Commission.

Similarly, the Commission divided responsibility for conducting other areas of required EM&V research, delegating most of the work to Energy Division with the exception of market assessment studies, which are deemed to be directly relevant to program design improvements.

The partitioning of EM&V in the manner described above may require modification to take into account the following issues:

1. Due to the significant increase in CPUC authorized rate increases to fund the IOU energy efficiency portfolios as well as the CPUC role in development and oversight of activities related to the California Long-Term Energy Efficiency Strategic Plan, the Commission has a greater stake in the design and management of programs than ever before.

2. Due to the increasingly important role of “non-resource” program activities within the IOU portfolios and the market transformation focus of many of the portfolio activities, the Commission has a need to evaluate IOU program performance on criteria other than energy savings.
3. Due to the increased funding levels and increased expectations for broader and deeper impacts as well as enhanced portfolio cost effectiveness, the IOUs have a need to increase early M&V to support continuous program improvements and evolution.

In light of these heightened Commission policy objectives and oversight responsibilities, the Energy Division will continue to be broadly responsible for managing and overseeing all research projects that support the development of data, information, and tools needed to conduct regulatory oversight as well as to improve the Commission’s energy efficiency policies. This research may include, but will not be limited to, any form of program evaluation, management and financial audits, market studies, and measurement and verification deemed necessary by Energy Division to accomplish the work delegated to the division by the Commission.

The Energy Division proposes that the IOUs continue to be authorized to conduct process evaluations, market research, and early M&V for the purpose of supporting the program design process, ensuring program quality, and adapting programs to changing conditions.

In cases where there is a clear benefit to consolidating both an IOU proposed EM&V project and an Energy Division proposed EM&V project, such as leveraging a single contractor to complete both a process and an impact evaluation of a single program or set of programs, the Energy Division should assign project management responsibilities to a single entity (either Energy Division or one of the IOUs). In such cases, a project management team composed of Energy Division and IOU staff will be formed to provide guidance to the project manager. In cases where an IOU is responsible for project management, Energy Division shall have the authority to supersede any project manager direction when Energy Division deems such action necessary to fulfill the Commission’s regulatory oversight responsibilities or to ensure effective and proper use of ratepayer funds.

Appendix B provides an inventory of EM&V activities proposed by the Energy Division and the Energy Division’s initial proposal for dividing categories of EM&V work between the Energy Division and the IOUs. A separate summary of EM&V projects proposed by the IOUs in their applications for approval of the 2009-2011 energy efficiency programs is included in Appendix C. The inventory of EM&V activities proposed by the Energy Division is likely to be more than the Energy Division will actually need to immediately implement, and will be narrowed down through a prioritization process described later in this document.

Energy division recommends modifications to the firewall between implementation and evaluation established by Decision 05-01-055. This firewall, as currently implemented, prevents entities who do program implementation work from performing EM&V in order to ensure that EM&V results remain independent and un-biased. Energy Division believes that gaining access to the expertise, knowledge, and experience available within the large community of professionals performing implementation offers potential for improving EM&V quality, with little risk of biased results. Entities who do program implementation can be recruited to collect data following strict protocols and can be restricted from performing analysis data analysis and stating the end results. Modifying the firewall to allow for case by case exceptions gives the EM&V project managers additional resources for gathering data more cost effectively. The risk of inserting bias into the EM&V data can be managed contractually and through rigorous oversight and quality control procedures.

C. Stakeholder Input Process and Approval of EM&V Projects

The Commission adopted administrative structure for EM&V includes requirements for stakeholder input into the EM&V activities. These requirements are documented throughout D.05-01-055, D.05-04-051, D.05-11-011, D.07-09-043, D.07-10-032, and the Jan. 11, 2006 and Jan. 2, 2007 ALJ rulings in R.06-04-010.

The Energy Division believes that a clearly understood and informal stakeholder input process has the potential to improve the quality of the EM&V work and increase the level of confidence all stakeholders have in the EM&V results. Energy Division therefore recommends that the Commission consolidate existing requirements for stakeholder input and restate those requirements in a comprehensive stakeholder input protocol for all ratepayer funded EM&V activities managed by either the IOUs or Energy Division.

The stakeholder input protocol should cover procedures for stakeholder and public review and input on EM&V project planning, development of savings estimates, publication of research findings, and the use of results produced by EM&V research projects. The stakeholder input protocol should provide an appropriate allowance of time for stakeholder input that is incorporated into the overall EM&V project schedule, because, in the Energy Division's view, the existing schedule and scope requirements do not allow sufficient time for the interactions and information sharing envisioned by stakeholders and the Commission.

Energy Division proposes the following protocols for obtaining stakeholder input on critical EM&V activities for a given program cycle. Energy Division recommends that these protocols replace the "Process and Review Protocols" laid out in previous ALJ Rulings cited above.

Overall EM&V Plans and Budget Approval:

1. Included in Appendix B is the Energy Division's proposed inventory of needed EM&V projects and the types of projects that can be fielded during the program cycle.
2. The EM&V project inventory will be discussed at the June 17th workshop.
3. Parties will provide comments on the EM&V project inventory suggesting refinements, additions, and an order of priority for the proposed projects.
4. The Energy Division will use party comments to revise the EM&V project inventory, develop estimated budgets for discrete projects, propose an order of priority for the projects, and identify projects to be eliminated from the list or deferred to a later date for implementation. The IOUs, in consultation with

- Energy Division, will also use party comments to revise their EM&V project inventory, develop estimated budgets, prioritize projects, and identify projects to be eliminated, deferred, or more appropriately undertaken by or with Energy Division. The IOUs will work with Energy Division to resolve disagreements on their proposed projects and include their refinements with Energy Division's revised inventory of 2009-2011 EM&V projects. Energy Division, with input from the IOUs and other stakeholders, will identify proposed fund shifting rules for EM&V activities, to the extent changes are required to existing policies.
5. The 2nd revision of the Joint Energy Division and IOU EM&V project inventory and EM&V plan will be provided to parties on the EE dockets via ALJ Ruling.
 6. The Energy Division and IOUs will hold a public meeting (or meetings) to answer questions from parties and discuss the refinements proposed in the 2nd revision of the Joint Energy Division and IOU EM&V project inventory and plan.
 7. Parties will file a final round of comments on the 2nd revision of the Joint Energy Division and IOU EM&V project inventory and plan with the CPUC.
 8. The Commission may then use the revised Joint Energy Division and IOU EM&V project inventory and plan and party comments as a basis for making a decision about its priorities for EM&V in a proposed decision in the 2009-2011 EE Application Docket.
 9. Parties file comments and reply comments on the ALJ's proposed decision.
 10. The Commission adopts decision on the Energy Division and IOUs EM&V plans and budgets, including any revisions to EM&V fund shifting rules.

Project-Specific EM&V Plans:

1. Energy Division and the IOUs will prepare and release RFPs for their respective EM&V projects as authorized by the Commission. RFPs will be released on an as needed basis throughout the program cycle. The IOUs will provide all RFPs and scopes of work to the Energy Division for review and approval, prior to issuance.
2. Energy Division will select contractors for all EM&V projects, including those to be managed by the IOUs. Certain EM&V projects managed by the IOUs may be exempted from this requirement if the IOU proposed project is clearly consistent with Commission rules, does not represent a potential conflict of interest, and does not replicate any existing or planned project managed by the Energy Division.
3. Energy Division and the IOUs will work with the selected contractors to develop a draft study (project) plan and budget for each EM&V project. The work plan will identify the methodology to be employed, the activities to be completed, the data to be gathered or generated, the parameters to be analyzed, the timeline of activities, and breakdown of the total budget. All draft work plans will be posted

- on a publicly accessible website (e.g. Energy Division's Contract Management System), distributed to parties in the relevant Energy Efficiency proceedings, and to lists of other interested stakeholders maintained by Energy Division and IOUs.
4. Energy Division and the IOUs will hold public meetings (in person, via webinar, or via webcast), separately or jointly as the case may be, to solicit input on the draft work plans. Parties may submit written comments on these work plans before and/or after the public meetings; these comments will be posted on the same website as the draft work plans. Energy Division will also review and may provide written comments to the IOUs on their work plans.
 5. Energy Division and the IOUs, working with their respective EM&V contractors, will finalize the draft work plans, taking into consideration the parties' written comments and input during the public meetings.
 6. The final work plans will be posted on the same website where the draft plans and written comments were posted. Responses to written comments on the draft work plans will be prepared and posted at the same time or soon after the final work plans are online. The IOUs' final work plans will require final approval from the Energy Division.
 7. If parties continue to take issue with the final work plans, a party or parties may file a motion with the Assigned ALJ and provide evidence for why the plans should be changed and how. The ALJ will resolve the dispute and direct Energy Division and/or the IOUs to revise the plans accordingly via ruling.

EM&V Project Implementation and On-going Feedback

1. Energy Division and the IOUs will convene a meeting among their staff, EM&V contractors, stakeholders, and any interested member of the public to share key results and EM&V findings that might lead to improvements in the portfolio and identify best practices and possible improvements to evaluation methods. This meeting will take place sometime around the middle of the program cycle or at such time when significant results from various EM&V projects are available. If so requested by parties or members of the public, Energy Division or IOUs, or both, should hold short informal meetings with groups or individual organizations, to discuss EM&V work progress and results.
2. Energy Division and IOUs will convene ad hoc meetings (approximately quarterly) among Energy Division staff, EM&V contractors, IOU EM&V staff and IOU program managers to discuss work progress and results. These meetings are to provide for timely feedback to program design and implementation. The IOUs can request meetings with Energy Division to discuss work progress and results at any time.
3. When significant results are produced by the EM&V work, and a technical report is not immediately pending, the Energy Division and/or the IOUs will provide

informal written summaries of the results to the IOUs and other stakeholders. These written summaries will be posted on the same website used for posting EM&V work plans and comments.

EM&V Technical Reports

1. When the Energy Division, IOUs, and their respective contractors complete drafts of any interim or final EM&V technical reports, they will be posted on the same website used for posting EM&V work plans, and a notice will be distributed to parties in the relevant Energy Efficiency proceedings and lists of other interested stakeholders maintained by Energy Division and IOUs. For this purpose, EM&V technical reports will be defined as reports produced by the Energy Division, IOUs, and their respective contractors documenting completed analysis and identified as a milestone in the EM&V work plan.
2. Energy Division and the IOUs will hold public meetings (in person, via webinar, or via webcast), separately or jointly as the case may be, to solicit input on the EM&V Technical Reports. Parties may submit written comments on these reports before and/or after the public meetings; these comments will be posted on the same website where the draft reports are posted. Energy Division will also review and reserves the right to provide written comments to the IOUs on their EM&V contractors' draft reports.
3. Energy Division and the IOUs, working with their respective EM&V contractors, will finalize the draft reports, taking into consideration the parties' written comments and/or input during the public meetings.
4. The final EM&V technical reports will be posted on the same website used for posting EM&V work plans. Responses to written comments on the draft reports will be prepared and posted at the same time or soon after the revised reports are posted.
5. If parties continue to take issue with the final EM&V technical reports, a party or parties may file a motion with the Assigned ALJ and provide evidence for why the report is deficient and what changes to the report would be necessary to correct the deficiency. The ALJ will resolve the dispute and direct Energy Division and/or the IOUs, via ruling, to prepare an addendum to the report correcting the deficiency. The addendum will be posted on the same website where the draft reports are posted.
6. Within 60 days of public release, the program administrators will respond in writing to the final report findings and recommendations indicating what action, if any, will be taken as a result of study findings. The IOU responses will be posted on the same website where the final reports are posted.

Aggregate EM&V Reports

1. Energy Division's draft reports aggregating or summarizing the results of the EM&V technical reports, in any form, will be issued via ALJ Ruling for parties' comments and posted on the same website where the draft reports are posted. (These aggregate reports will include the current Annual Verification Reports and Interim & Final Performance Basis Reports, or the equivalent, as adopted by the Commission.)
2. Energy Division will hold public meetings (in person, via webinar, or via webcast), to discuss the draft report. Parties will file comments and reply comments on the draft aggregate EM&V report afterwards.
3. The assigned ALJ will issue a proposed decision on the draft aggregate EM&V report, revising it as needed based on parties' comments.
4. Parties file comments and reply comments on the ALJ's proposed decision.
5. The Commission adopts a decision on a final aggregate EM&V report.

The current procedures for managing the IOUs' conflicts of interest in conducting EM&V, coordination with Energy Division, and replication of the Energy Division's work should be enhanced with the following clarifications and improvements

(an asterisk [] indicates a current requirement arising from previous Commission Decisions. Appendix A include selected excerpts from Commission Decisions addressing this issue):*

1. The IOUs should be required to provide all RFPs and scopes of work to the Energy Division for review* and approval.
2. The Energy Division should be provided with the opportunity to review all contractor proposals received by the IOUs.*
3. The Energy Division should make the final selection of all EM&V contractors.*
4. The IOUs should be required to get input from Energy Division on EM&V work plans, schedules, methodologies, analyses, and draft reports.*
5. The IOUs should provide all EM&V project data and reports to the Energy Division as they are produced.
6. The IOUs should develop a web-based system to track their EM&V work and archive EM&V documentation for ready use by other IOUs, the Energy Division, and the Energy Division's EM&V contractors.

D. Cost-Effectiveness Calculations and Accomplishment Reporting

The Energy Division proposes to continue effort on the following activities related to the management of parameters used to calculate energy savings and cost-effectiveness:

1. The use of a new cost-effectiveness calculation tool (CE tool) will be required for developing all cost-effectiveness and savings accomplishment reports.
2. New and revised savings estimates will undergo a thorough stakeholder review process.
3. Savings estimates not included in the DEER database (non-DEER Measures) will undergo a reasonableness review by the Energy Division.
4. Only savings estimates that have been reviewed may be used in cost effectiveness calculations and accomplishment reporting.
5. Parties who disagree with any final savings estimates may file a motion with the Assigned ALJ and provide evidence for why the final savings estimates are in error.

Cost-Effectiveness Calculation Tool Enhancements

Energy Division plans to implement the following processes for developing cost-effectiveness calculations and applying savings estimates to program planning and accomplishment reporting for the 2009-2011 period:

- The CE tool used for reporting and portfolio metrics calculations is currently under development by Energy Division and will be provided to the IOUs for use with their quarterly reports to the CPUC in the first quarter of 2010.
- All measure parameters used to develop savings accomplishment reports will be required to come directly from either the DEER database, or an Energy Division maintained database of non-DEER measures, the contents of which will be separately submitted by the IOUs and reviewed and approved for use by Energy Division.
- The first version of the CE tool is planned for release in the first quarter of 2010.
 - The CE tool will include many new features and will be a software based tool rather than a spreadsheet, as is currently the case with the E3 Cost-Effectiveness Calculator.
 - The new tool will allow easy input and review of program and portfolio data as well as improved output functionality. The CE tool will accept input of IOU accomplishments at the individual measure installation, project, or at the level required by Energy Division's EM&V activities; thus IOU reporting will be done at the program tracking system level not at an aggregated level, as is currently the case with the E3 Cost-Effectiveness Calculator.

- Energy Division will develop and distribute for comment the accomplishment tracking and reporting template that will be used for both CE tool calculations of IOU portfolio ex ante accomplishments as well as Energy Division portfolio ex post performance EM&V activities. Issues with the structure and content of the IOU tracking submissions, as outlined in Section F below, will be addressed in the development of this enhanced reporting requirement and format.

The IOUs will be required to use Energy Division's CE tool for their reporting of 2009-2011 accomplishments (quarterly and annual reporting detail data) excluding bridge-funding accomplishments. The new tool will allow the aggregation of portfolios from programs, and programs from measures from the Energy Division maintained DEER and non-DEER databases.

Process for Adding New Measures to DEER

Energy Division proposes a process for the review and approval of new measures for DEER as well as updates to existing measures in DEER. The 2008 DEER database for 2009-2011 planning, as released in December 2008, will be used for the 2009-2011 program cycle IOU reporting. New measures or updates to existing measures may be incrementally proposed for DEER on a rolling basis. The DEER team will submit new measures or proposals for the revision of existing DEER measures to Energy Division for review. Prior to that submission the DEER team is directed to consult with stakeholders and solicit comments and take all reasonable comments or suggestions into account before proceeding. Energy Division will review the DEER team submission, solicit additional stakeholder comments on the DEER team submission as needed, and will make all decisions on incorporating revisions into the DEER database to be used for IOU reporting.

In the short term, the DEER team has proposed the additions and/or updates to the December database listed below.

- Addition of new measure code base line options for those measures effected by codes and standards updates which take effect during the 2009-2011 period (Title 24/20, EPAAct, etc.); the existing code base lines will be retained, just new measure values for the new code baselines will be added.
- An update to multi-family residence measures from the 2005 non-updated measure values to be consistent with those measures which were updated for single family residences, including lighting, appliances, HVAC and Domestic Hot Water (water heaters).
- Several IOUs have requested that common linear florescent lighting systems measures be added; these include retrofit of T12 40 watt lamps using older magnetic or new hybrid ballasts as well as the installation of newest generation of T8 lamps and high efficiency ballasts.
- The DEER team has identified several anomalies with existing measures and has requested permission from Energy Division to update those measures; the DEER

team has been directed to submit a list of all such issues for review by Energy Division and stakeholders.

Non-DEER Measure Reasonableness Review

Energy Division proposes a process for the creation and update of a database of Energy Division maintained non-DEER savings parameters. The IOUs will commence submitting non-DEER measure data details to Energy Division for review and incorporation into the Energy Division maintained non-DEER database. These submissions will be in electronic format and shall include all impact parameters required for the cost effectiveness calculations in a similar manner as contained within the DEER database (i.e., unit energy savings that can be applied to quarterly installation counts or other parameters) as well as workpapers which document the derivation or source of those parameters. Non-DEER measures may require specific parameters to be reported by the IOUs in order to calculate impacts. All such parameters shall be identified during this submission process and included in the quarterly reporting of accomplishments by the IOUs. Energy Division will request assistance from its EM&V contractors in the review of the IOU non-DEER measure submissions. Energy Division will also solicit comments from other stakeholders, other agencies, or the general public during its review of proposed non-DEER measures. Energy Division will maintain the non-DEER database for public access along with the DEER database.

- Energy Division will develop and distribute data and workpaper templates to the IOUs for use in submitting non-DEER measures for approval. This template will include the identification of parameters required to be reported for each measure to allow calculation of portfolio accomplishments as well as review of those accomplishments by Energy Division EM&V contractors. ED will also develop and distribute the initial measure classification and naming system.
- For non-DEER measure ex-ante assumptions, the IOUs shall submit all cost effectiveness parameters and engineering workpapers to Energy Division for reasonableness review.
- Once Energy Division accepts these non-DEER workpaper measure-level detail parameter values, these measures will be entered into Energy Division's non-DEER database.
- Only measures included in this vetted database may be used in the new CE Tool.
- Should Energy Division and the IOU have a disagreement on the reasonableness of the utility's non-DEER measures workpaper estimates, the utility may bring the matter to the assigned ALJ for a resolution by filing a motion.

The IOUs will incrementally submit non-DEER measures on an ongoing basis; however, no IOU accomplishment claims will be accepted for any measure not in either the DEER or non-DEER databases maintained by Energy Division and calculated with the new CE Tool. This will ensure that non-DEER measures will only need to be reviewed once initially and again only if any ex ante assumptions are proposed to be revised.

Energy Division will work with the utilities to develop a template for reporting customized measures and projects. For these customized measures and projects, the primary objective is to insure that the reporting includes separation of major measure categories (such as lighting, HVAC, refrigeration, etc.) as well as sufficient measure detail to understand how the values were estimated.

All ex-ante estimates, both DEER and non-DEER, are expected to be updated by the end of 2010 for use in planning portfolios that will start in 2012.

Energy Division may request that the DEER team consider adopting IOU submitted non-DEER measures into the DEER database. In this case, the DEER team will propose an update to the DEER database via the normal process and document any proposed changes to the non-DEER measure the DEER team finds necessary. Upon Energy Division approval of such a new DEER measure, the non-DEER equivalent measure will be removed.

A common measure classification and naming system, covering both DEER and non-DEER measures will be developed and maintained by Energy Division with assistance from EM&V contractors and the IOUs. This classification and naming system will be required for use by the Energy Division and the IOUs in order to prevent duplication of measures under alternate names as well as facilitate use of common measure names and values across all IOUs.

E. Proposed Process for Authorizing EM&V Budgets and Projects

As discussed in Section C, the Energy Division recommends a process for developing the portfolio of EM&V projects, obtaining stakeholder input, and requesting budget authorization from the Commission, summarized again below.

1. Included in Appendix B is the Energy Division's proposed inventory of possible EM&V projects and types of projects that can be fielded during the program cycle.
2. The EM&V project inventory will be discussed at the June 17th workshop.
3. Parties will provide comments on the EM&V project inventory suggesting refinements, additions, and an order of priority for the proposed projects.
4. The Energy Division and IOUs will use party comments to revise the EM&V project inventory, develop estimated budgets for discrete projects, propose an order of priority for the projects, and identify projects to be eliminated from the list.
5. The Energy Division will issue RFPs for primary consultants to be paid from 2009 bridge funds set aside for EM&V.
6. The 2nd revision of the Joint Energy Division and IOU EM&V project inventory and plan will be provided to parties on the EE dockets.
7. The Energy Division and IOUs will hold a public meeting (or meetings) to answer questions from parties and discuss the refinements proposed in the 2nd revision of the Joint Energy Division and IOU EM&V project inventory and plan.
8. Parties will file a final round of comments on the 2nd revision of the Joint Energy Division and IOU EM&V project inventory and plan with the CPUC.
9. The Commission may then use the revised Joint Energy Division and IOU EM&V project inventory and plan and party comments as a basis for making a decision about its priorities for EM&V in a proposed decision in the 2009-2011 EE Application Docket.
10. Parties file comments and reply comments on the ALJ's proposed decision.
11. The Commission adopts decision on the Energy Division and IOUs EM&V plans and budgets, including any revisions to EM&V fund shifting rules.

F. Data Availability, Data Quality Improvement, and Reporting

The Energy Division believes that the quality of the program tracking data¹ and information provided to the Energy Division and their EM&V contractors to support the evaluation efforts needs considerable improvement. The program tracking databases contain detailed information on program participants, specific energy efficiency projects, and specific energy efficiency measures rebated by the program. In order to measure and verify energy impacts, the Energy Division and their EM&V contractors depend on the program tracking data to design sampling plans and as a baseline reference for updating IOU claims with ex-post EM&V results. Many problems discovered with using the program tracking data records as a basis for verifying program impacts are documented in the Energy Division's Interim Performance Basis Report² and 2006-2007 Verification Report.³ Key issues with data availability, data quality and reporting are summarized below.

- In general, the data and information provided by the IOUs is useful for conducting evaluation activities, but in many cases repeated follow-up data requests are necessary as critical data are sometimes initially missing.
- While utility staff appear to make a good faith effort to fulfill EM&V data requests, there are some critical delays that have a cascading impact on the timing of EM&V field work and Energy Division's reporting schedule.
- The IOU program tracking systems have many limitations which make their use in evaluation time-consuming and labor-intensive:
 - Lack of consistent measure descriptions and naming conventions substantially increases the time and expense required to segregate measures into common measure groupings.
 - Program tracking data lacks unique key fields to enable tracking of a line item or project throughout the program cycle and identification of records that have changed from one data submission to the next.
 - Program tracking data parameter estimates for some line items are incrementally updated, sometimes spanning several quarters or program years, and are often not accompanied with notification, a clear rationale, or updated workpaper. This means the quarter and year of each portion of the claimed savings cannot be tracked or easily understood, which is highly problematic when developing samples.
 - Program tracking systems are not consistent across the utilities in terms of content, format, and quality, making it difficult to perform cross-IOU data management and analysis.

¹ The terms "program tracking data", "program tracking databases" and "program tracking system" are generically used here to refer to the elementary underlying information on projects and measures installed and rebated through the utility energy efficiency programs. Each utility maintains different systems and procedures for managing program related data.

² Available at <http://www.energydataweb.com/cpuc/>

³ http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/EM+and+V/081117_Verification+Report.htm

- Significant time must be spent conducting reviews, quality control, data cleaning and consolidation each time a new program tracking dataset is delivered.
 - Project baseline and measure base case conditions are rarely included in the program tracking systems. Assumptions must therefore be made regarding pre-existing conditions for most project sites. The precise type and conditions of existing equipment should be recorded as a program requirement before new installations are made.
 - The lack of complete location data makes assignment of appropriate climate zones and locating sample cases time-consuming and difficult.
 - Measure units (e.g. lamp, fixture, refrigerator, BTU, ft² of floor space, etc.) are poorly reported across all IOUs. Units are commonly left blank, or are reported on a “kWh saved” basis or simply as “Unit”. This greatly hampers analysis, as there is little insight into how the line item savings are calculated.
 - References to DEER measures are inconsistent across all IOUs, or are absent. Sometimes only generic DEER measure IDs are given, sometimes DEER 2005 Run IDs rather than DEER 2008 IDs are given. In many cases, the savings value given for a measure does not match the DEER savings value for the Run ID that is referenced.
 - Many key data are not collected or entered into the program tracking systems, or are poorly specified, such as program delivery mechanism building type
 - Sometimes measure quantity is equal to “0”, or it is the equivalent of the net or gross savings. In either of these cases, we gain no knowledge of the actual quantity that was installed.
 - Frequently, SEMPRA and PG&E report zero savings for a line item; however, installed quantities and rebate payments are reported.
 - Key upstream measures, such as CFLs, are tracked by quantity shipped rather than quantity sold or installed.
- Matching E3 calculator data with program tracking data remains a significant challenge. A number of data elements required by the E3 calculator are only presented in the E3 line items and not in the program tracking system, making reproducing the cost-effectiveness and savings results difficult.
 - The existence of multiple different reports and databases (monthly reports, quarterly reports, cost-effectiveness spreadsheets, utility program tracking databases, subcontractor tracking databases and spreadsheets, annual reports, etc.) has substantially increased the data processing and interpretation work for EM&V contractors, Energy Division staff and IOU staff and has sometimes led to multiple parties using dissimilar assumptions regarding program participants and portfolio costs and impacts.
 - In some cases, large custom project details needed by the evaluation are stored as paper files only, or do not have supporting electronic materials. In other cases, electronic files are made available only as PDF image files that are not text searchable.
 - Non-DEER measure workpaper quality and availability varies.
 - For programs targeted upstream or midstream, the program tracking database does not always capture information about the participating upstream or

midstream market actors. In addition, installation site addresses and contact information is not always captured in program tracking databases. This information is critical for verification and evaluation of upstream and midstream program activities.

Initial Recommendations

The IOUs, Energy Division, and EM&V contractors will collaborate as soon as possible to examine, improve, and streamline the management and sharing of program tracking data to facilitate the earliest practical transition to a combined accomplishment reporting and EM&V tracking quarterly IOU reporting submission.

Upgrades to the program tracking systems shall be required and shall not be done without Energy Division review and approval, and shall include EM&V contractor input. Upgrades to the program tracking systems shall be uniform across the utilities and shall be designed to contain all of the data needed for all EM&V and reporting purposes and required to use cross-IOU standardized fields, standardized naming conventions, standardized data elements and data validation rules consistent with DEER. The IOUs shall only deliver program tracking data that conforms to these standards.

Data tracking requirements for all upstream programs will require special attention to make sure that the kinds of data that are required for verification and evaluation are tracked.

The IOUs will be required to document their data quality control procedures and work with the Energy Division and EM&V contractors if improvement to those procedures are needed.

EM&V data request response times are a key factor in keeping the Energy Division's EM&V performance reporting work on schedule.

The IOUs shall develop a system for making all energy efficiency project documentation readily available to the Energy Division and their EM&V contractors in electronic format wherever possible. Quarterly reporting for custom measures shall include this documentation for those measures determined by Energy Division, during the non-DEER measure review and approval process, as requiring such documentation.

The Commission should adopt just one form of data to be conveyed on a regular basis from the IOUs to Energy Division. This should be the most disaggregate form, i.e., program tracking data and detailed expenditure data. The Energy Division recommends that program tracking and financial data be submitted to the Energy Division on a quarterly basis along with outputs from the new Energy Division managed CE Tool and

simplified, but highly specified, narrative reports. Additional reporting detail may be required when the new RRIM and the 2009-2011 portfolios are adopted.

G. 2009 Bridge Funding Period

2009 EM&V Values

In Decision 08-10-027, the Commission authorized funding for 2009 programs while new policies and portfolios were deliberated. The programs being implemented during 2009 are continuations of a subset of 2006-2008 programs. Concurrently, the Energy Division's EM&V reports that were to have been used for calculating shareholder incentives for 2009 accomplishments have been suspended. For these reasons, the Energy Division believes that it may not be the best use of ratepayer funds to conduct any new field work or surveys on 2009 program participants strictly for the purpose of calculating program and portfolio impacts for 2009.

We instead propose that the Energy Division use results from the final 2006-2008 evaluation reports as inputs to calculating the energy impacts of 2009 programs, for those measures and programs that were evaluated during the 2006-2008 period and extended during 2009.

The Energy Division may conduct field work and/or surveys using 2009 program participants to gather additional data for DEER or to fulfill 2006-2008 sampling targets that were not fulfilled with 2006-2008 program participants.

The 2006-2008 final EM&V results will be released either before or about the same time as the fourth quarter 2009 IOU reports. The draft evaluation contractor's reports will be available before that time. This will likely result in some substantial differences in values reported by the Energy Division and the IOUs.

2009 Avoided Costs

D.06-06-063 adopted electric and gas avoided cost for use in planning and evaluation of the 2006-2008 energy efficiency IOU portfolios. These interim values were not adopted for other uses or future EE cycles, thus there are no avoided costs adopted for 2009-2011 yet. The Energy Division proposes the adoption of a new set of electric avoided costs just for energy efficiency using the CCGT cost from the recent MPR, including T&D costs. The gas price forecast should be updated based upon the following options:

1. the 2006-2008 interim avoided costs from D.06-06-063 and an escalation factor for years not covered in the interim values;
2. current market values;
3. using the market values obtained for the 09-11 planning values.

If the electric avoided costs cannot be updated, the Energy Division recommends the adoption of the 2006-2008 interim avoided costs from D.06-06-063 extended for the

years necessary for the 2009 period (2030 with a 20 year EUL maximum) using the same methodology and an escalation factor for years not covered in the interim values.

Energy Division recommends that the GHG adder be updated using the 2008 MPR value of \$30 per ton.

2009 Cost Effectiveness Tool

The Energy Division recommends the update of the most recent version of the E3 calculators being used for 2006-2008 with:

1. the range of years required for 2009 reporting considering the allowed EUL/RUL measure life;
2. avoided costs adopted as described above;
3. policy adjustments such as the cost of capital discount rate values;
4. inclusion of DEER load shapes from 2008 DEER update.

2009 DEER Values

The Energy Division recommends the use of 2008 DEER utilized for ED 2006-2007 ex ante update (Version 2008.2.04 October 30, 2008) for reporting 2009 accomplishments, unless updated with 2006-2008 ex-post EM&V values as described above.

Appendix A

Selected Excerpts from Previous Commission Decision Related to IOU Managed EM&V

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Thus, we propose a process that allows the IOU Portfolio Managers and program implementers to manage a limited subset of evaluation studies **as long as there is no potential for conflict due to the nature of the study, and as long as Energy Division has a lead role in the selection of contractors.**

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For similar reasons, we believe that the IOUs, rather than Energy Division staff, should take the lead in allocating Commission-authorized funding for this category of EM&V across individual studies, develop the scope of work for each study and prepare the RFP. **The IOUs should solicit input from Energy Division, the CEC and program implementers during this process,** and they may also continue to utilize CALMAC as a forum for obtaining technical input, at their option. As we have stated previously, CALMAC is not a Commission-created advisory group. In any event, **the IOUs must also provide opportunities for public input on the program design evaluation and market assessment studies as they are being developed and, once finalized, report the findings to the Commission and hold public meetings to discuss the findings of the studies.**

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Although we believe that the pool of eligible consultants for EM&V studies will not be significantly affected by the firewall we establish today, we do recognize that many of the same EM&V contractors that perform program design evaluations and market assessments are the same ones that conduct program and portfolio impacts-related studies. This raises an additional concern, namely, that even the most conscientious EM&V consultants may feel pressured to “tread lightly” in presenting the results of program and portfolio impacts-related evaluations, knowing that the IOU Portfolio Managers (and program implementers) will be selecting contractors for other evaluation studies.

To address this concern, we will require that Energy Division make the final selection of any contractors hired by the IOUs or program implementers to perform program design evaluation and market assessment studies. For this purpose, we require Energy Division to solicit input from an ad hoc technical committee that includes the IOU Portfolio Manager(s) and program implementers that will be contracting for the study. Energy Division may structure the committee in any way that it believes will best enable it to make an independent determination of the most qualified bidder.

Page 13 D. 05-11-011

“In response to ORA’s concerns over certain measurement and verification (“M&V”) activities that are included in the IOU EM&V budget plans, we are satisfied with the IOUs clarifications that they may need to conduct **early M&V assessments on a quick turnaround basis in order to support the program design process and ensure quality control**. As they explain, if the programs are not producing the savings expected because of faulty installation procedures, inaccurate baseline condition estimates or other reasons, the IOU program administrators need to know immediately by initiating targeted M&V activities to correct the problems or begin planning for more productive uses of the funds. In addition, early M&V can come in the form of measuring key assumptions during a pilot launch where the sample population is relatively small and testing the viability of innovating programs. **Joint Staff and the IOUs have already discussed ways to coordinate all M&V efforts to minimize duplication of effort and avoid multiple contacts with the same customers, and should continue to do so throughout the program cycle**”.

Appendix B

Energy Division's proposed inventory of EM&V projects

Type of EM&V Project	CPUC	JOINT	IOU
Impact Evaluation and M&V			
<i>Analysis Projects</i>			
Pre and post M&V on key technologies to develop accurate ex-ante gross savings estimates	x		
Maintenance of best available deemed savings parameter estimates	x		
Early M&V for early feedback to program managers on key programs			x
Impact evaluation of "non-resource" program effectiveness	x		
Load shape metering and modeling	x		
In situ and laboratory measure life studies	x		
Free-Ridership analysis	x		
Participant spillover analysis	x		
Evaluation of performance metrics	x		
<i>Methods Improvement Projects</i>			
Capitalize on advanced meter / smart grid initiatives		x	
Improvements to the IOU data tracking systems, data collection, storage, and sharing		x	
Integration of measurement and evaluation with other demand side activities (demand response, distributed generation, etc.)			x
Establishment of an EM&V data warehouse	x		
Use EM&V findings as a tool for program improvements over long term rather than as short term static assessments		x	
Procedures for using EM&V results in developing deemed savings parameter estimates	x		
Better integrate M&V results and savings forecasts/savings goals with forecasting and procurement	x		
Conduct more forward looking EM&V focused on emerging technologies			x
Develop a better understanding of lifecycle embedded energy & GHG impacts	x		
Quality control of program and EM&V collected data / Plan for how to make data developed by all EM&V more useful		x	
Data management enhancements		x	
Explore alternate methods for measuring program impacts		x	
Improve participant survey methods		x	
Process Evaluation			
<i>Analysis Projects</i>			
Program design evaluation			x
Program and portfolio strategic planning		x	
Assessment or development of program theories, market theories, and logic models		x	
Monitoring, updating, and maintaining a "best practices" body of knowledge			x
Program implementation evaluations		x	
Evaluations for improving program management, staffing, and training			x
Program information and information support systems		x	
Quality control methods and operational issues		x	
Program management operational improvements			x
Program delivery systems, components and implementation practices			x
Monitoring of low participation rates, low penetration, and low savings realization			x
Market Analysis and Policy Support Research			
Baseline studies on key technologies and market segments using general population samples	x		
Market effects studies on key technologies and market segments / Evaluation of market transformation metrics	x		
Research and pilot projects focusing on energy use behavior and conservation			x
Analysis of utility customer needs and market ally needs			x
Energy efficiency technology adoption modeling			x
Longitudinal energy efficiency technology saturation studies			x
Market characterization and market assessment studies needed for program planning and design			x
Customer satisfaction surveys			x
Macro level analysis of energy efficiency portfolio direct impacts on long-term procurement, plant and transmission construction, grid level impact, and GHG emissions	x		
Experimental design pilot projects conducted in coordination with program implementation.			x
Energy efficiency potential studies / Savings goals	x		
Avoided cost updates	x		
Energy consumption and energy intensity studies to support energy procurement and demand forecasting	x		
Explore alternate methods for measuring program impacts	x		
Explore alternate methods for measuring net savings	x		
Explore alternate methods for measuring market effects and market transformation	x		
Financial and Management Audits			
Financial and management audits	x		
Energy efficiency measure cost studies, including analysis of incremental measure costs.	x		

Appendix C

Summary of IOU proposed EM&V projects

Type of Evaluations (Identified in Utility Testimony 09-11 March '09 Applications(Chapter 5))	Utility Rationale for Conducting this Type of Evaluation	
Process Evaluation		
Program Design		
Strategic Planning Support	SCE; SDG&E; SCG	The Strategic Planning support will work towards the updated of the current Commission Strategic Plan.
Concept testing and/or conjoint studies on new program ideas/packaging (e.g., focus groups, and surveys);	PG&E	Needed for testing new program ideas and packaging (specifically for integrated designs)
Program Administration		
Program Oversight and improvement	SDGE, SCG	SDG&E and SCG cite all of the "Process Evaluation" categories cited in the Framework including Program Administration; but there were few activities cited by the other utilities related to program administration evaluation.
Program staffing allocation and requirement;	SDGE, SCG	
Management and staff skills and training needs	SDGE, SCG	
Program information and information support system;	SDGE, SCG	
Reporting and the relationship between effective tracking and management including operational and financial management.	SDGE, SCG	
Evaluability Assessments	SCE	
Program Implementation and Delivery		
Description and assessment of program implementation and delivery process	SDGE, SCG	Including assessments by individual integration approaches and customer market segment: New programs or those with increased emphasis analyses of the market potential of program candidate technologies will become more important
Process evaluations on integrated delivery strategies;	PG&E	
Program-Linked Market Analysis Studies	SCE	Updating Best Practices database Surveys, and focus groups to assess points of influence in EE adoption
Quality control methods and operational issues;	SDGE, SCG	
Program management and management's operational practice;	SDGE, SCG	
Program delivery systems, components and implementation practice	SDGE, SCG	
Program Best Practices Updates	SCE	
Decision-making studies	PG&E	Gather data about market segments that will be targeted by the various programs. Surveys will gather data about customers' decision-making approach to energy efficiency investments, key factors that enable or inhibit their adoption of energy efficiency measures and participation in energy efficiency programs, and their awareness, attitudes and knowledge regarding energy use, energy efficiency and conservation. This funding allows both consultant and internal evaluation staff work to analyze coverage of markets, strategies, end uses, and technologies in SCE's program portfolio. It also funds exploration of optimal coordination among programs in delivery, marketing and outreach. in terms of changes in practices such as stocking studies, POP displays, product turn-over vendor enlistment, etc. (e.g., conduct real-time measurement on performance metrics during implementation to feed back into program for adjustment as needed);
Program targeting, marketing and outreach effort;	SDGE, SCG	
Market Segment Studies	SCE	This funding allows both consultant and internal evaluation staff work to analyze coverage of markets, strategies, end uses, and technologies in SCE's program portfolio. It also funds exploration of optimal coordination among programs in delivery, marketing and outreach. in terms of changes in practices such as stocking studies, POP displays, product turn-over vendor enlistment, etc. (e.g., conduct real-time measurement on performance metrics during implementation to feed back into program for adjustment as needed);
Portfolio Analysis	SCE	
Program metrics development and monitoring	PG&E	Updating Best Practices database Surveys, and focus groups to assess points of influence in EE adoption
Program timing, timelines and time-sensitive accomplishments	SDGE, SCG	
Quality control procedures and processes;	SDGE, SCG	
Early Measurement & Verification		
Program goal attainment and implementation processes and result	SDGE, SCG	Early, small-sample measurement and verification (M&V) efforts including collection of baseline data are needed to assure that early energy savings estimates are being achieved, and if they are not, whether and how achieved savings can be increased. To assess interim savings assumptions for new program approaches; and (i.e., building and process control systems, addressable ballasts, etc.).
Early Measurement & Verification/Baseline Activities	SCE	
Billing analysis, short-term metering or spot watt measurement of pilots	PG&E	
Assessment of the interactive effects of key technologies and strategies that incorporate both EE and DR features and enabling capabilities	PG&E	
Market Response		
Attitude and usage segmentation studies;	PG&E	Assess perceptions toward key EE measures and practices Measure and track awareness of EE messages,
Advertising awareness studies	PG&E	
Customer interaction and satisfaction	SDGE, SCG	SDG&E and SCG cite all of the "Process Evaluation" categories cited in the Framework including Market Response.
Customer or participant energy efficiency or load reduction needs and the ability of the program to provide for those needs	SDGE, SCG	
Market allies interaction and satisfaction	SDGE, SCG	
Low participation rates or associated energy saving;	SDGE, SCG	
Market allies needs and the ability of the program to meet those needs	SDGE, SCG	
Reasons for overly high free-riders or too low a level of market effects, free-riders or spillover;	SDGE, SCG	Collaboration needed to define market targets (not cited by utilities in filings To determine key factors that characterize and influence targeted segments (i.e., market size, trends, industry characteristic customer behaviors and delivery channels); The utilities will develop meaningful baseline and market transformation concepts and metrics for programs that do not currently have them, and then propose to design and administer studies to gather and track consistent, reliable and valid baseline and market effects data. Collaboration needed to define metrics
Intended or unanticipated market effects	SDGE, SCG	
Market Transformation (MT) Program Evaluation		
Define Market Targets		
Market characterizations/assessments	PG&E	Collaboration needed to define market targets (not cited by utilities in filings To determine key factors that characterize and influence targeted segments (i.e., market size, trends, industry characteristic customer behaviors and delivery channels); The utilities will develop meaningful baseline and market transformation concepts and metrics for programs that do not currently have them, and then propose to design and administer studies to gather and track consistent, reliable and valid baseline and market effects data. Collaboration needed to define metrics
Quantitative Baseline and Market Transformation Information	SCE; SDG&E; SCG	
Market Transformation metrics	ALL	
Statewide studies (e.g., Residential Appliance Saturation Survey, Commercial Energy Use Survey, Industrial Energy Use Survey,) Energy Efficiency Potential and Forecasting		
	ALL ALL	The utilities are required by Title 20 of the California Code of Regulations to conduct periodic surveys of their residential, commercial, and industrial customers and to provide the survey results to the California Energy Commission for demand forecasting purposes. These surveys are also used as primary data sources for energy efficiency potential analyses. SCE states that this evaluation activity will be managed by CPUC.
Other EM&V Funded Activities		
Conference And Organization Support	SCE; SDG&E; SCG	Utility program management and evaluation staff members as well as Commission energy efficiency oversight staff need the information and professional development offered by these conferences to maintain their work at the premier level that California programs and evaluation work currently attain. The California Measurement Advisory Council (CALMAC) website makes publicly available electronic copies of all energy efficiency studies. CALMAC serves as a forum for soliciting input on and presenting results of EM&V studies. It also hosts meetings of Commission and utility EM&V staff to communicate and work together on EM&V issues.
CALMAC Support And Website	SCE	The Commission has authorized the use of 2009 EM&V bridge funds for the development of a statewide energy efficiency web portal and to begin the Energy Efficiency Workforce Education and Training (WE&T) needs assessment study and the development of a related WE&T website
Web Portal Development	SCE	SCE will contract for enhanced demographic data as well as use packaged demographic data available from SCE's market research organization. SCE maintains a system of 24 weather stations that provide data used to estimate energy usage and energy savings of individual customers in multiple programs
Basic Data Collection And Analysis: Demographic, Business, And Weather Data	SCE	These studies provide a relatively low-cost option for gathering data. Usually they provide data on a national level that can be used as at least a rough representation for SCE's service territory or that allow for comparison with SCE's service territory.
Multi-Client Studies (examples)	SCE	